A C T I V I T I E S

EGGNAUT
or
Houston We May Have an Omelet!

Grade Level: Primary and Middle School

The Problem: Your mission, should you choose to accept it, is to design and build a vehicle that will protect your Eggnaut from the perils of reentry. The objective is to have your Eggnaut survive the fall with out a crack.

Grades K-5	*Grades 6-8*	*Materials*
4	2	8.5" x 11" sheets of standard copy or typing paper
25	20	Drinking straws of any size with at least a 5"length
25	20	Popsicle or craft sticks/wood splints/tongue depressors
150 cm	100 cm	String of any size
150 cm	100 cm	Masking tape of any size
5	5	Rubber bands any size
1	1	RAW grade A egg
1	1	Pair of scissors

The Rules:

1) The reentry system must fit inside
   Primary - a space of 30 cm x 30 cm x 30 cm
   Middle - a space of 20 cm x 20 cm x 20 cm
2) Parachutes or helicopters are allowed.
3) A plumb line can be used to target the reentry vehicle onto the recovery zone.
4) All parts of the reentry system must be above the reentry orbital height of
   Primary - 2 to 3 meters
   Middle – 3 to 5 meters
5) The reentry system's mass must not exceed
   Primary - 400 grams
   Middle – 300 grams
6) It must land as close as possible to the center of the reentry zone.
7) You do not have to use all of the materials listed.

Questions to Consider:

1) How can I design my reentry system (capsule) to protect the eggnaut?
2) What can I design into my reentry system to make sure it lands in the center of the target area?
3) How am I going to slow it down?
4) Which of Newton's Laws of Motion are at work on the capsule and eggnaut?
5) Draw a plan of your system and explain how it is going to work and why?
6) Report your test results and
   Primary - why they happened and how you would fix them.
   Middle - why you think they occurred and what you could do to improve your design.

Grade Level: High School

The Problem: Your design team is to design and build a scale landing pad to be used in case of an emergency extraction from the new eggnaut orbital system. The landing pad must prevent a raw eggnaut from breaking after it has accelerated under the force of gravity for a distance of one meter or more.

Materials:

10, 8.5" x 11" sheets of notebook or copy paper

30 cm of masking tape

A RAW eggnaut (grade A large egg)

Plumb line for aiming (meter stick)

Modeling clay (50 to 60 g. lump as a practice egg; dents = cracks)

Triple beam balance

Specifications:

1) You may use only the materials listed; you do not have to use all of them.
2) Egg landing pads must stand by themselves. They cannot be taped to anything or held by anyone.
3) A cracked egg is a broken egg. If the egg bounces off the landing pad or the landing pad falls over allowing the egg to touch the floor, the egg is considered broken.
4) No parachutes or wings are allowed.
5) Use any technique that you may have learned in any science or mathematics class that will aid you in constructing the pad.
6) When you have completed the task, you will hand in a report that will have a drawing with a written description of your design with a prediction of how it will function. Repeat the results of the tests. Make suggestions on how to improve your design and explain exactly how these changes will

function. You will also calculate the speed at which the egg is hitting the landing pad and the force of the impact of the egg on the landing pad. Show your work and include the formulas.

7) Your design will be scored on how successful you are in the egg drop and your report.

MAKE A CRITTER

The Challenge: Imagine that a new planet has been discovered – Betelgoose - your job is to design an animal to live there. Its a chance to let your imagination run wild …or maybe we should say "run wildlife."

Instructions:

Read about what kind of world Betelgoose is and a few of the strange life forms already living there. Don't forget: the whole idea is to use your imaginations but still make good ecological sense with your decisions. The creature should have adaptations that prepare it especially well in body and behavior to thrive in one or more of Betelgoose's habitats.

For example, the gravitational pull on Betelgoose is stronger than that on Earth. Would your creature need special adaptations to handle that? If your creature lived in the tropics of Betelgoose, would it need a defense against swarms of O'Malley's Snips? As you read about Betelgoose you'll find examples of creatures that prey on your creature or be preyed on by it. How will your critter cope?

The Rules:

1) Only one entry from each student or team.

2) You must describe the main habitat and climate in which your critter lives (for example, tropical forest floor). Use an 8 line paragraph minimum.

3) How does it move? Include both the form of locomotion and its organs for moving (for example, leaps on powerful hind legs). Use an 8 line paragraph minimum.

4) Is it a herbivore, carnivore, omnivore or other? What, specifically, is its main food and how does it get it? Use an 8 line paragraph minimum.

5) What other creatures does it prey on, if any? How does it defend itself against predators? Use an 8 line paragraph minimum.

6) How does it cope with Betelgoose's extreme seasonal changes? Use an 8 line paragraph minimum.

7) Is it solitary? Does it live in large groups? Describe its social behaviors. Us an 8 line paragraph minimum.

8) What else would you like us to know about your critter? Use an 8 line paragraph minimum.

9) You must include a drawing of your critter. Put in as much detail as possible but not a micro drawing.

10) No magical powers are allowed.

11) Everything on the planet Betelgoose must obey the know Laws of Nature.

Information about the imaginary planet Betelgoose

Planetary Location:

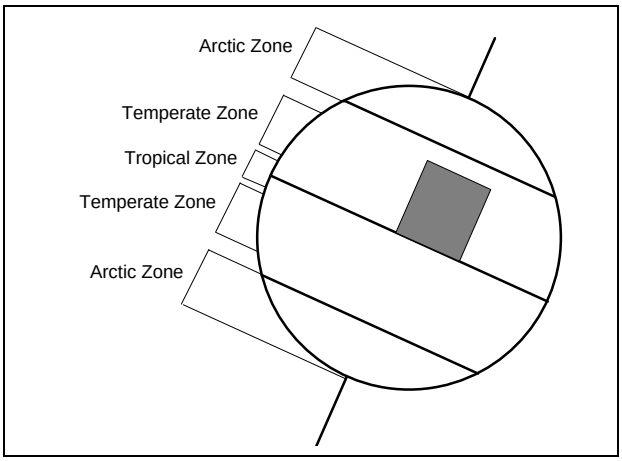
Sub sector: Span 175 located on the core ward edge of the spiral arm.

Regina Loran Star system. H-R White main sequence star with average surface temperature of 12,000 degrees C.

Diameter: 2,073,600 km.

Sun spins on its axis from left to right. 12 planets and 2 asteroid belts in system.

The Third, Fourth, and Fifth planets have conditions favorable to Earth based life forms .



Regina Loran 5 (a.k.a. Betelgoose)

Planetary Conditions:

Planetary diameter 11200 km. Gravity is 1.2 times Earth's gravity. Strong magnetic field. Nickel Iron Core. Some volcanic activity on the planet. Average distance from its sun is 298,000,000 km. Betelgoose circles its sun every 690 Earth days. Betelgoose length of day is 27 hours 25 minutes. Betelgoose tilts 25.25 degrees on its axis, causing seasonal changes. Betelgoose has both a northern and southern polar ice cap. The planet has 7 continents and is covered by 7 mountain range systems. Betelgoose also has its own version of Van Allen Radiation Belts and an atmospheric composition of 78% Nitrogen, 19% Oxygen, 1% Carbon Dioxide, 1% trace gases (similar to Earth), and 1% Argon. Atomospheric pressure is 1.05 times that of earth. Hydrographic percentage of

coverage is 65% (surface covered by water). Overall average temperature is 3 degrees C cooler than the Earth's average temperature.

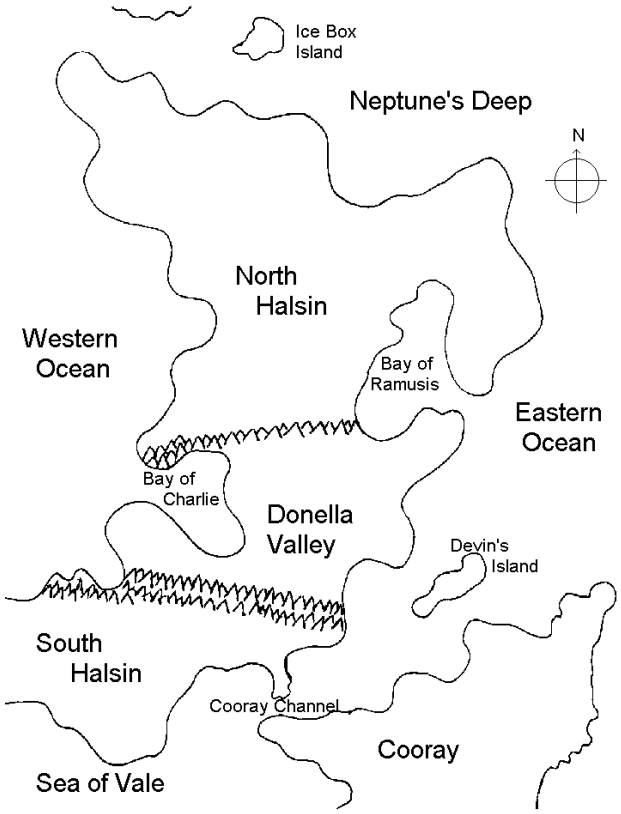
Regional Conditions

North Halsin – subarctic to temperate, dry

Donella Valley – temperate

South Halsin – temperate to subtropical

Cooray – tropical



Brief History

Betelgoose, discovered in 2232, is the fifth planet in Regina Loran system. Betelgoose has many species of plants and animals, including a number that have some intelligence. Planetary mineral survey indicates favorable condition for industrialization. The extreme tilt of the planet's axis makes for seasonal changes which are more extreme than on earth. These extreme changes have encouraged a wide variety of seasonal adaptations by Betelgoose's species. The biological survey of the plants and animals yeilded a variety with adaptations to the local environment in their own specific ways. The classification of the life forms turned out to be remarkably similar to those of Earth. Among the more unusual species described so far are the following:

Excerpt from Biological Survey

Name: Halsin Sand Eels

Habitat: Sandy regions of North Elauos

These reptilian like animals resemble Earth snakes but have four small legs that they keep tucked close to their body most of the time. They are covered with heavy armored scales which stand up to the abrasives of the sands of Halsin rift Sand Depression. Each digit has a scoop like claw which helps the Sand Eel move through and on the sand. The Sand Eel deals with the increased gravity of Betelgoose with a more robust bone and muscle structure. Sand Eels eat insects, very small desert mammals and eggs. They are not very aggressive using camouflage and surprise to ambush their prey. They bury themselves deep in the sands to escape the frigid night of the rift.

Name: Lesser Betelgoose Hickory Palm

Habitat: Temperate Donella Valley

Although these trees look like Hickory Trees of Earth, they are not true hickory trees. Lesser Betelgoose Hickory Palm averages about 15 to 18 meters in height with a spread of 10 to 15 meters across. The tree has a shape like a hickory tree in growth habit but does not lose its leaves or go dormant like the hickory's of Earth. The bark resembles Hickory but it has a high number of strong fibers which resemble rope in their cross section making the tree very strong and are difficult to cut through. The trees inner trunk is very much like that of a palm tree and very high in food value. The plant also produces a nut which resembles the Hickory nut but is harder and larger. The tree structure makes it unusable for the most part as lumber.

Name: Great Betelgoose Hickory Palm

Habitat: Tropical rain forest of Cooray

Huge but very rare versions of the Lesser Betelgoose Hickory Palm, they can reach 50 meters, with a spread of 50 meters. All other characteristics are like those of the Lesser species.

Name: Neptune's Blankets

Habitat: Deep, regions of all oceans

Neptune' Blankets are something like a large flat jelly fish but weight nearly 35 Kilograms. They swim by rippling their bodies the same way as rays on Earth. They kill their prey by engulfing it and stinging it. Very little is known about these strange creatures, as live Neptune's Blankets have been sighted only briefly on several occasions.

Name: O'Malley's Snip

Habitat: Subtropical South Halsin and Cooray

The O'Malley's Snips are small insect like creatures no more than 1 cm in length with a wing span of 1.5 cm. They often appear from the brush in swarms of several hundred to thousands of individuals. They feed on the blood of mammals, birds and plants juices. They resemble a biting fly. Further study is needed to determine if they can transmit disease. They also migrate north during the long summer months.

Name: Golden Bell

Habitat: Forested and open areas of South Halsin, Donella Valley, Cooray

Golden Bell is the major ground cover on Betelgoose. There are large tracts of the little plant known as the Golden Bell. They are a brilliant golden yellow in color with the plants about the size of a softball, and a very tough skin and bell shaped base. They extract their nutrients and water from the soil and also use photosynthesis. Inside the bell shaped stems are soft fibrous tissues. Below ground the root system is entangled forming a mat.

Name: Snorks

Habitat: Exclusive to Donella Valley

Snorks are about the size and shape of a large prairie dog. They can walk upright, on their powerful hind legs, and have well developed grasping hands on their forelimbs. They are very rare and shy, so that they have not been well studied yet. Early observations show them to be as intelligent as a chimpanzee. With the climate of Betelgoose being cool, even in summer temperate zones, Snorks spend much of their time in large underground nests. These are heavily insulated with at least one emergency escape exit. Snorks have been observed using simple tools shaping them with their teeth. They have also been seen working together to drive off predators from the nest. Further study is called for to understand them.

LOW EARTH ORBIT PROJECT (L.E.O.P.)

Specification for Bid Proposal

The Space Transportation Company (STC) is accepting Plans and Bids for the construction of a Low Earth Orbit delivery system. The Propulsion system must use water and compressed air not to exceed a ratio of 1500 ml of H_2O to air pressure of 75 psi. The vehicle must be reusable with a minimum turn around time between launches. The booster must also be able to loft a payload (A CAPSULE CONTAINING AN EGGNAUT) in the range of 300 grams to 450 grams to a minimum altitude of 100 meters.

The design system must use the available components of 1 or 2 liter plastic engine and tank assembles (1 or 2 liter plastic soda bottles) in inventory along with other non-strategic materials (NO METAL PARTS AT ALL!). The total weight minus fuel must not exceed 500 grams.

The contract will be awarded to the company (student or team) with the best design and performance (capacity to altitude). **Each proposal must have the following component pieces:**

1) A company cover sheet with the following information:

   Company Name

   Design Team Member

   Location (School and Address with email and phone #)

   Control Officer in charge (Teacher)

2) A complete scale drawing of the design to a scale of 1 to 1 showing all component pieces in both two dimensional and three-dimensional form.

3) A complete bill of material used to construct the test system.

4) A construction time line with the number of hours needed to construct the components systems.

5) A load balancing and thrust drawing.

6) Calculations of the force being apply to the rocket or thrust developed. (Middle and High School)

7) Identify and explain which laws of Motion are at work in this process.

8) A test results log of the development program with the time, date, weather conditions at the test site, at time of launches, and the result of the capsule test (egg broke or cracked or survived). Signed by the Control Officer (teacher) supervising the program for STC to the accuracy of the data.

9) Photographic evidence of construction and testing.

10) Any other materials the designer (or design team) thinks the panel needs to know to judge their L.E.O.P. design.

Additional references are Rockets NASA EG-1996-09-108-HQ and Water Rockets from Insights Visual Productions Inc. PO Box 644, Encinitas, CA 92024, (619) 942-0528.

"Micro-G" Game or Sport

Sports in Space or Any Other Planetary Bodies …or LOOK OUT! That Player has a Killer whip shot!

In the near future there will be space platforms in orbit and colonies on the Moon and even Mars with families. People will be living there for extended periods of time. Plans will need to be made for exercise and entertainment while people live in these artificial environments.

The Challenge

Your mission should you choose to accept it, O'great sports inventor, is to create a sport protocol that people in space or on a planetary body can do which will be interesting, exciting and fun. Your proposal for the new sport protocol must have the following:

1) A basic description of your activity and its rules and an explanation of how it meets the basics for a sport (exercise, interesting, fun).
2) A comparison of the playing of your sport on the Earth and in space. Describing the changes needed to play it anywhere (rule changes and equipment differences).
3) How the physical laws affect sports on the Earth and in space or other planetary bodies.
4) A mathematical analysis of the sport (middle/high school) along with or a qualitative analysis for the lower grades.
5) Investigations of sports protocols that would not be suited to space (reasons and supporting information why they were rejected or thrown out).
6) An article written for the sports section of your local news back home (wherever that may be) describing the solar system's "Championship" match for your sport protocol.
7) A drawing of the equipment and field with size or dimensions, etc.

Become a Space Activist

Students can write to their government leaders to ensure they are helping to build the future YOU want to see in space.

How to Write Your Congressman

The most effective letter you can write is a personal one, written in your own words. It should be concise, informed, and polite. Your letters do not need to be lengthy; however they should express your beliefs and desires for a specific program. In addition, if you think that your future depends on it, let Congress know.

Congressional staffers advise that personal, hand-written or typed letters have more impact than the same form letter from everyone. Because it's good politics, Senators and Representatives pay attention to their mail. They know that their response to your letter may decide your vote (or your parent's vote) in the next election. Some specific recommendations:

- In the first paragraph, state your purpose—then support your position with the rest of the letter.
- Be both factual and passionate about your cause.
- Explain why you think it's important and how not having the program would affect you and others in your community.

Suggested Format

The Honorable _____
United States Senate
Washington, D.C. 20510

Dear Senator _____:

OR

The Honorable _____
United States House of Representatives
Washington, D.C. 20515

Dear Representative:
I am writing to request your support for space, and specifically for _____ _____. I believe this is important because_____
In conclusion, I urge you to support _____ _____.
Sincerely,

[Your name]

Help to Make Your Future Possible!

Please write your government leader now to open up space for all mankind. **Every year, Congress passes laws that effect** your **future. You can influence these laws by writing your senators and representatives. Put your personal dreams and ambitions in the letter and ask your elected officials to help achieve it.**

What are your dreams? The following are example messages you may wish to include in your letters.

- I strongly urge you to support the human settlement of space because:
- Opening the space frontier will
    - Create a future for me and my children
    - Contribute to breakthroughs in health, environmental, materials, and space research

- Inspire and educate all people
- Create jobs in every field
- Contribute to our nation's economic health

- Humans of all nationalities will work together in space which will increase the mutual trust between nations by enhancing global cooperation.

Why Open the Space Frontier?

Solar power, which is clean, can be collected in space by solar cells and beamed to earth for our energy needs. There is even a spot on the Moon that is continually illuminated by the Sun!

Space has enormous clean energy resources which can help solve the energy problems on Earth. The oil supply on Earth is finite. Finite means that the supply is limited and we could eventually run out.

How is living off Earth part of our heritage?

Americans are a frontier people. This nation and the freedoms contained in our Bill of Rights were the result of early Americans craving a new frontier. Freedom of speech, freedom of the press, freedom to assemble, and religious freedom were born on this new frontier. Opening the space frontier would nurture new freedoms for all humankind.

Books which are potential resources for the Teacher or interested students.

- Bova, Ben. Welcome to Moonbase. Ballantine Books, New York, 1987.
- O'Neil, Gerald. The High Frontier: Human Colonies in Space. Space Studies Institute Press, Princeton, New Jersey, 1989.

Internet Exploration

Students will explore the Space Zone web page, see p 8, and provide feedback as to what they like, do not like, and would want to see that is currently not available. Students will submit comments to the Space Zone web site. For any suggestions that Space Zone uses to update the web site, the submitting student(s) will be recognized by name, school, and teacher. Students will present at least one item of interest to their class that they feel is significant for the area of science in which they are currently studying. Students will develop a resource list of World Wide Web sites that they feel can enhance the classroom experience.

"Houston, We Have a Problem"

To set the stage, show a space video with a problem to solve such as "Houston, We have a problem!," "Apollo 13," or "To The Edge and Back" from Space America Foundation. Review the Design Technology Model, below. Have groups of students work as "earth-based technicians" and "remote explorer" teams to solve problems encountered by the remote teams. During the first phase, each group assumes the role of technicians to design a solution to a problem, using only materials and tools available in the remote location. Each group will solve a different problem. Each team must communicate effectively via a remote location (no direct contact). Students should critique and provide suggested improvements and then switch places and repeat. Develop a scoring/assessment tool for originality, creativity, knowledge and structure. Suggested problems: space tools, containers, vehicles, shields, solar sails, zero-gravity eating apparatus, time constraints.

Design Technology Model

Step 1 Analysis & Investigation

Step 2 Framing a Design Brief

Step 3 Information Gathering

Step 4 Generation of Alternative Solutions

Step 5 Choosing the Solution

Step 6 Development Work

Step 7 Prototyping

Step 8 Testing and Evaluation

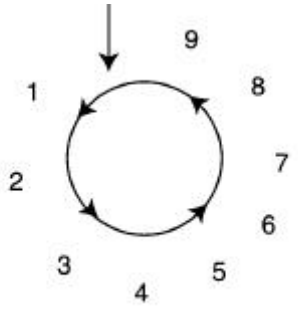
Step 9 Redesign/Re-implementation

Star Watch

This can be an exciting event for students and families. The key to success is proper planning. Be sure to pick a date during Spaceweek in advance and notify parents. Be sure to cover enough basic information on astronomy so that information learned can be applied during the event. Have students bring binoculars or small telescopes and try to involve a local Astronomy Club. Have star charts available which show star positions relative to your latitude and local time.

Select some distinct objects such as the Orion Nebula. Students can make an inclinometer (see below) and use it to locate these objects. Have contests for the first star seen, first planet seen, brightest star, constellations, or lunar features if visible.

Try to connect the following items to the activity: time, observations, coordinates, ecliptic, etc., or for daytime activities: sunspots, time calculations, and ratios of shadow effects.



If your school is wired to the World Wide Web, there are many resources that can allow you to view current images from the sun while staying in the classroom.

For example:
www.umbra.gsfc.nasa.gov/images/latest.html
www.atom.uiuc.edu

Safety Note: All students should be warned about looking up at the sun without the aid of a solar viewing device that has been specifically made for Solar Observations.

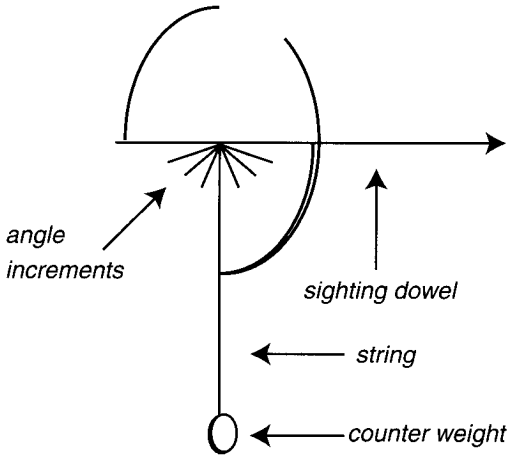
Observation Inclinometer

Students build and use an inclinometer to find stars in the night sky. Students should sight along the dowel. The counter weight will hang such that the angle to the object can be determined on the protractor. A bearing reading can be taken such that the angle to the object and its bearing can be used to locate the object on the star map.

Materials needed:

- 1 watch
- 1 plastic protractor
- 1 star map
- 1 piece of twine or string (30 cm)
- 1 compass
- 1 counter weight (fishing weight)
- 1 flashlight with small red lens
- 1 dowel 40 cm in length

Students should glue the dowel along the straight edge of the protractor so that one end is flush with the end of the protractor and the rest of the dowel extends along the length of the straight edge. The string should be tied through the hole of the protractor's zero-point. Tie the counter weight to the other end of the string.



Note: Students should take timed interval measurements for determination of relative motion and change. Be sure to have students check their inclinometer and practice taking measurements of inclination to sighted objects.

Space Art

Students will be given the opportunity to develop a mural, picture, flip book, cartoon book, or sculpture that would relate to the topic of "Space: For All Mankind." Refer to art work that has an astronomical relationship. Suggested evaluation for art projects would be in originality, creativity, knowledge.

Timeline

Using the World Wide Web and/or other resources, students will explore information from the earliest records on astronomy and develop a timeline that is current through today. Use pictorial or art work when appropriate to enhance timeline.

Board Game

Students will adapt or develop a board game which uses space exploration or space fact/knowledge as a framework. Students will establish rules for game. Games could be judged based on originality, creativity, knowledge, and structure. Students may participate in competition, both in development and playing the game. The game format could be developed for play on computer.

Great Scientists

Objective: To provide a framework in which students can develop an understanding, appreciation, and application of the history of science that has influenced space programs and our daily lives.

Task: Research key figures such as Galileo, Newton, Kepler, Einstein, Tsiolkovsky, Goddard, Von Braun, etc. relative to period in which they lived, what they discovered, how it is applied to space exploration.

Elementary:

Dress in costume and demonstrate basic knowledge of their character. Could be done on the final day to culminate Spaceweek activities. Students would present something about the person and their significance in space exploration. For example:

- Galileo: Could be done at a star party in honor of the telescope
- Newton: Could demonstrate the effect of gravity in the classic setting of the tree.
- Goddard: Could demonstrate rocketry by launching model rockets

Middle School:

Students could write and perform a play where the characters above were brought to future. As an alternative, they could write for the school newspaper "interviews" with their characters, or broadcast a live "interview" across the school. They should emphasize the difference between now and then (how far we have come).

High School:

Students would work in teams to develop an in-depth profile of the above characters and then present synthesis in the following possible formats.

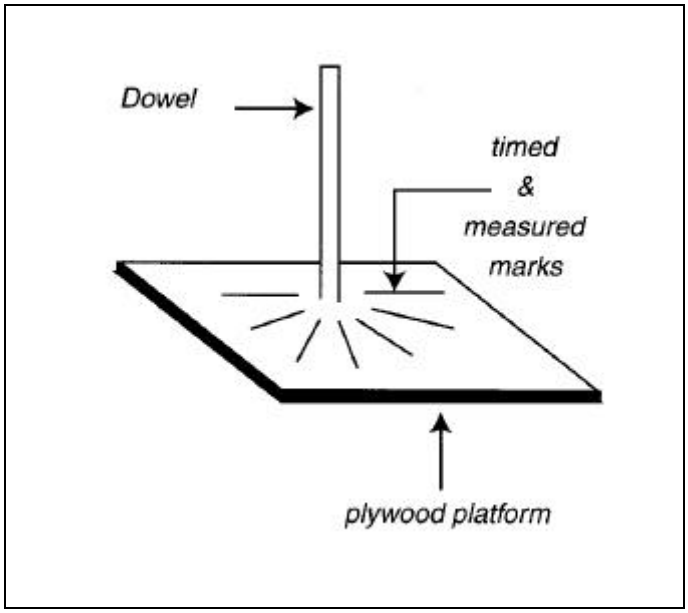
- Conduct a debate on issues of science that the group as a whole would not have experienced. Teams will choose debater for their historical character. This would be most applicable in a large student body presentation.
- Develop and write a play which would bring the characters together in some type of setting with the purpose of exposing their thoughts and theories.
- Students could structure a special edition of the school newspaper framed around space and its benefits to society, and the roles of great scientists and engineers.

SunDial

Materials needed:

- 1 piece of thick poster board
- 1 piece of ¾ inch plywood (1 meter square)
- 1 measured dowel (1/2 meter)

Students can make their own sundial by using a 1 meter square piece of ¾-inch plywood and thick poster board with a measured dowel. When the plywood has been cut to size, place the poster board on top of the plywood. Along one side of the board, measure 50 cm. and mark for the drilling of a hole the size of the dowel. The dowel should be placed in the appropriate size hole in the plywood. Using a compass, align the board edge with the dowel along the east/west line established with the compass.



Have students take hourly readings, beginning in the morning and mark the poster board along the shadow cast by the dowel. Be sure to mark the time of the measurement. Students should continue to take observations all during the school day or over a period of days. Be sure to keep the sundial in the exact same location while all observations are being made. Once initial readings have been taken and marked, continue daily observations.

Have students try to answer the following based on their observations:

1) Was the sundial effective for keeping daily time?
2) What are the limitations of the sundial in keeping time?
3) What can the sundial tell us about the motion of the Sun relative to the Earth?
4) What can the sundial tell us about the motion of the Earth relative to the Sun?
5) What can this tell us about ancient cultures' attempts to measure time?

Math Connection:

Explain why the shadow cast by the dowel can be used to determine the height of a tree or some other tall object of an unknown height?

$$\frac{\text{length of dowel}}{\text{length of dowel shadow}} = \frac{\text{height of object (x)}}{\text{length of object shadow}}$$

(Be sure to use a calibrated chronometer or clock to determine the measured marks for sundial.)

Popular Media

An activity could unite both English and Reading in a survey of science fiction literature from the 19th and 20th century that has inspired people about space. Example of such authors are Jules Verne, Isaac Asimov, Ben Bova, Ray Bradbury, Arthur C. Clark, Jerry Pournelle, etc.

Students could review space-related film and/or television and determine their impact on public perceptions about space. Students can also determine if science is being used correctly. Examples are ET, 2001, Independence Day, Apollo 13, Close Encounters, Star Wars, Star Trek, Contact, Lost in Space, etc.

Students could review news coverage of space and determine impacts on society. Does the coverage treat successes and failures equally? Does it balance coverage of government and non-government space activity? Does it fairly cover national vs. international space news? How does the amount and type of news coverage about space impact public opinion about space?

Super Quiz

This can be a team- or group-based school-wide activity. **The students will research and gather information** as teams or groups based on the suggestions below or other appropriate categories related to space or the Spaceweek 1998 theme, "Space: For All Mankind." The group will then choose a format in which to display information and learning from (but not exclusive to) the list below. Review games format in order to ensure familiarity with games concept .

Students make or adapt a game:

- Quiz Show game
- Strategy/Simulation Game
- Guessing Game (pantomime, charades)
- Expedition Game (what would you do if, or what would you need if)

Students help collect data and prepare questions for either a school-wide or class-oriented quiz. If conducted in an auditorium, the super quiz could be conducted as a "Jeopardy" or similar team-game format.

"Extra Credit"

- Students can "televise" the game using pictures and sounds to enhance the production. As an alternative students can produce a game that could be played on the Internet.

Categories of Information

Constants	Missions	Impacts
Universe	Comm Sats	Material Science
Gravity	Apollo	Medicine
Time	Shuttle	Technology
Space	Space Station	Agriculture
Terrestrial	Hubble	Weather
Extraterrestrial	Mars Mission	Economy
	Planetary Probes	Communication
		Education

A D D I T I O N A L R E S O U R C E S

Spaceweek International Association

The international clearinghouse for Spaceweek information, the Association provides the Spaceweek Guidebook, Teacher's Kit, Poster, Press Kit, and other services to participants and the media.

Web: www.spaceweek.org
Email: admin@spaceweek.org
Phone: 800-20-SPACE or 281-333-3627
Fax: 281-335-0229
Mail: 1110 NASA Road One, Suite 100
Houston, TX 77058 USA

Other Space Organizations

Aerospace States Association
www.sni.net/asa

Astronomical Society of the Pacific *415-337-1244*
www.aspsky.org

Challenger Center *703-683-9740r*
www.challenger.org

European Space Agency
www.esrin.esa.it

NASA *202-358-0000*
www.hq.nasa.goz/office/codef/education

National Science Teachers Association
www.nsta.org

National Space Development Agency of Japan
www.nasda.go.jp

National Space Society *800-376-ORBIT*
www.nss.org

Planetary Society *818-793-5100*
www.planetary.org/tps

ProSpace
www.enterprisemission.com

Space America Foundation *713-626-2459*
www.spacezone.com/saf.htm

Space Camp *800-63-SPACE*
www.spacecamp.com

Space Center Houston *281-244-2145*
www.spacecenter.org

Students for the Exploration & Development of Space
www.seds.org

United States Space Foundation *719-576-8000*
www.ussf.org

Young Astronauts *202-682-1984*
www.yac.org

Additional web sites of interest

The World Wide Web is an exciting place to find additional information or resources for the class, school, and community. Listed below are some suggested Web sites as starting points. You will find that any search engine can take you to other exciting and educational space sites.

Space Zone
www.spacezone.com

Space Simulators in the Classroom
www.chico.rice.edu//armadillo/Simulations

Science Information Infrastructure
www.cea.berkeley.edu/Education/sii

Digital Images of Space
www.images.jsc.nasa.gov/html/home.htm

Lunar and Planetary Institute
www.Institucass.jsc.nasa.gov/lpi.html

Space Shuttle Info
www.stsci.edu/pubinfo/pictures.html

Events
www.newproducts.jpl.nasa.gov/calendar/calendar.html

Center for Mars Exploration
www.cmex-www.arc.nasa.gov

Space Science & Engineering
www.ssec.wisc.edu

Planetary Facts
www.nssdc.gsfc.nasa.gov/planetary/planetfact.html

Comets
www.comet.arc.nasa.gov.images/latest.html

Solar Images
www.umbra.gsfc.nasa.gov/images/latest.html

Local Resources

For local assistance with Spaceweek, you might also try to contact any of the following in your area:

- Astronomy and model rocket clubs
- Observatories
- Science museums or planetariums
- NASA centers
- Aerospace companies
- Colleges or universities